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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/735,053

12/12/2003

Gopal Pingali

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EXAMINER

SEVER, ANDREW T

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/735,053	<b>Applicant(s)</b> PINGALI ET AL.	
	<b>Examiner</b> ANDREW T. SEVER	<b>Art Unit</b> 2851	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13, 15-37, 39 and 40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-37, 39 and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/12/2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 8/28/2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

Art Unit: 2851

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-3, 5-13, 15-29, 31-37, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. (US 5,114,224 as cited in previous office actions) in view of Connelly et al. (US 2003/0202156 as cited in previous office actions) and Pinhanez (US 6,431,711 as cited in previous office actions.)

*With regards to applicant's claim 1:*

Miyamoto teaches in figure 1 a positioning system comprising,

At least one mount (10 of figure 1) for mounting a projection unit (11 of figure 1), the projection unit comprising at least a projector (11 of figure 1) for projecting the distorted image (see BPAI decision 6/23/2008) where the at least one mount is coupled to a mechanism for providing rotational movement (10 of figure 1 which is described in column 2 lines 51-68) for adjusting an orientation of the projection unit.

Miyamoto does not specifically teach a mechanism for providing translational movement.

Connelly teaches in figure 1a such a mechanism for providing translational movement for adjusting the position of a projection unit mounted on it. Connelly teaches in paragraph 9-11 that such a translational movement system allows for more versatility in positioning a projector eliminating or at least substantially reducing keystone distortion, which those of ordinary skill in the art would recognize is caused by the projector not being in the "sweet-spot". Given the

Art Unit: 2851

teaching of Connelly that such translational movement allows for the projection unit to produce a substantially undistorted image on a surface and would further in the case of Miyamoto allow more versatility in tracking an object such as a tethered balloon or blimp sine the projector can follow it both rotationally and translationally, it would have been obvious to one of ordinary skill in the art a the time the invention was made to mount the mounting unit of Miyamoto such that it can have translational movement as taught by Connelly which would result in an undistorted image on the surface greatly enhancing the effectiveness of the projection unit so viewers can enjoy an undistorted image as well as giving users of the system greater versatility in placing the projection unit.

Neither Miyamoto or Connelly necessarily specifically teaches receiving a distorted image generated by a display controller, however as stated by the applicant's on page 1 of applicant's specification Pinhanez system teaches distorting the image before projection (see column 3 lines 21-33 of Pinhanez). Pinhanez teaches that this allows so that when the image arrives on any surface that it will appear properly undistorted on the surface such as a table or other irregular surface. Accordingly it would have been obvious to include having the image distorted by the display controller as taught by Pinhanez in the system of Miyamoto in view of Connelly that way the projected image can appear undistorted on a variety of surfaces.

*With regards to applicant's claims 2 and 3:*

See the embodiment of Miyamoto in figure 11 where a redirection device (30) is used, wherein said device is a mirror as claimed in applicant's claim 3.

Art Unit: 2851

*With regards to applicant's claim 5:*

The projector is coupled to a controller (100).

*With regards to applicant's claim 6:*

The controller is remote (i.e. not mounted on the projection unit).

*With regards to applicant's claim 7:*

Miyamoto in view of Connelly does not teach that the system is used for user interaction.

Pinhanez's system further includes an interactivity portion allowing interaction between people and a projector (see column 2 lines 15-25.) Pinhanez teaches in column 1 lines 54 through column 2 line 2, that having an interactive region for a user interaction has the advantage of allowing a user to change slides or other video medium without having to break the flow of the presentation. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the projection system of Miyamoto in view Connelly interactive as taught by Pinhanez since such a system allows a user (or plurality thereof) to take even greater advantage of the moving projection screen of Miyamoto (for instance a user could bring the screen to them and control part of the presentation and then it could be moved to another user to do likewise without having to deal with moving the computer or remote control around which can cause some difficulties.)

Art Unit: 2851

*With regards to applicant's claim 8:*

Pinhanez teaches a variety of uses for such a system at column 15 lines 60-61 including bringing up diagrams and one of ordinary skill in the art would also expect it to include such things as starting playing of a video on a remote video player as this is the advantage of Pinhanez that things operated either by moving the controller around or a remote control can be controlled just by interaction.

*With regards to applicant's claims 9-11:*

The mounts of Miyamoto in view of Connelly in view of Pinhanez would be used to hold the interaction recognition system.

*With regards to applicant's claim 12:*

Both Pinhanez and Miyamoto teach cameras.

*With regards to applicant's claim 13:*

Pinhanez teaches using voice in column 12 lines 39-45.

*With regards to applicant's claim 15:*

Connelly teaches using a rail system (parts 106 are rails).

*With regards to applicant's claim 16:*

The rails of Connelly are fixed to a surface.

Art Unit: 2851

*With regards to applicant's claim 17:*

See part 4 of Miyamoto.

*With regards to applicant's claim 18:*

As described in column 4 of Miyamoto, geometric information is used in determining the projection position. (Cartesian coordinates are a type of geometric information.)

*With regards to applicant's claim 19:*

The system of Miyamoto includes part 12 which serves as tracking and sensing equipment for identifying a position of the at least one projector.

*With regards to applicant's claim 20 and 22:*

The mount of Miyamoto can position the projector with two degrees of freedom.

*With regards to applicant's claim 21 and 23:*

Miyamoto in view of Connelly allows for 3 degrees of freedom.

*With regards to applicant's claim 24-28, 31 and 32:*

See above where the method of using the projector to make an undistorted image upon a surface is obvious in light of the projector that does so.



Art Unit: 2851

*With regards to applicant's claim 29:*

Connelly teaches the system can be used with two projectors or more.

*With regards to applicant's claim 33:*

The method of using the projection system of Miyamoto in view of Connelly and Pinhanez is obvious.

*With regards to applicant's claim 34:*

Part 4 is basically a computer that executes a computer program for positioning a projection unit to provide a substantially undistorted image upon a surface (see above for the method of doing so).

With regards to applicant's claims 35-37, 39 and 40:

See above.

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. (US 5,114,224 as cited in previous office actions) in view of Connelly et al. (US 2003/0202156 as cited in previous office actions) and Pinhanez (US 6,431,711 as cited in previous office actions) and Raskar (US 6,793,350 as cited in previous office actions).

Miyamoto teaches in figure 1 a positioning system which performs the method of providing a substantially undistorted image upon a surface comprising,

Art Unit: 2851

At least one mount (10 of figure 1) for mounting a projection unit (11 of figure 1), the projection unit comprising at least a projector (11 of figure 1) for projecting the distorted image (see BPAI decision 6/23/2008) where the at least one mount is coupled to a mechanism for providing rotational movement (10 of figure 1 which is described in column 2 lines 51-68) for adjusting an orientation of the projection unit.

Miyamoto does not specifically teach a mechanism for providing translational movement. Connelly teaches in figure 1a such a mechanism for providing translational movement for adjusting the position of a projection unit mounted on it. Connelly teaches in paragraph 9-11 that such a translational movement system allows for more versatility in positioning a projector eliminating or at least substantially reducing keystone distortion, which those of ordinary skill in the art would recognize is caused by the projector not being in the "sweet-spot". Given the teaching of Connelly that such translational movement allows for the projection unit to produce a substantially undistorted image on a surface and would further in the case of Miyamoto allow more versatility in tracking an object such as a tethered balloon or blimp sine the projector can follow it both rotationally and translationally, it would have been obvious to one of ordinary skill in the art a the time the invention was made to mount the mounting unit of Miyamoto such that it can have translational movement as taught by Connelly which would result in an undistorted image on the surface greatly enhancing the effectiveness of the projection unit so viewers can enjoy an undistorted image as well as giving users of the system greater versatility in placing the projection unit.

Art Unit: 2851

Neither Miyamoto or Connelly necessarily specifically teaches receiving a distorted image generated by a display controller, however as stated by the applicant's on page 1 of applicant's specification Pinhanez system teaches distorting the image before projection (see column 3 lines 21-33 of Pinhanez). Pinhanez teaches that this allows so that when the image arrives on any surface that it will appear properly undistorted on the surface such as a table or other irregular surface. Accordingly it would have been obvious to include having the image distorted by the display controller as taught by Pinhanez in the system of Miyamoto in view of Connelly that way the projected image can appear undistorted on a variety of surfaces.

Miyamoto does not teach coordinating the position of the projector with another projector.

However Raskar teaches in figure 1 a method for projecting an undistorted image upon a curved image with more than one projector, which includes projecting a structure light pattern. As shown in figure 4 of Raskar multiple projectors can be used in projecting on large curved surfaces and a first projection unit produces a first portion of the distorted image and a second projection unit produces another portion of the distorted image. Raskar teaches that prior art methods of projecting on large curved or irregular shaped surfaces with stationary projectors required several hours each day to align (see column 1 lines 60-65), this is clearly not an option with the projection system of Miyamoto in view of Connelly and Pinhanez as the projected surface moves. Raskar teaches that Raskar's method allows for projecting on curved display surface with easy calibration (See column 2 lines 55-63.) Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Raskar's

Art Unit: 2851

method of projecting with multiple projectors/cameras on large curved surfaces in the method of projecting taught by Miyamoto alone or in view of Connelly and Pinhanez.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al. in view of Connelly and Pinhanez as applied to claim 2 above, and further in view of Machtig (US 5,278,596.)

As described in more detail above, Miyamoto in view of Connelly and Pinhanez teaches a positioning system for a projector, which among other things includes a redirection device; however it does not teach the use of optical fiber, and lenses for redirecting projected light. Machtig teaches in column 1 line 64 through column 2 line 18, that such a system allows for the light source to be kept separate from the heat sensitive components and it also allows for mechanism allowing the projector to be moveable without sacrificing brightness of the projected image. Accordingly since it would be desirable to use as bright of a projector as possible to project on the distant moving screens of Miyamoto; it would have been obvious to one of ordinary skill in the art at the time the invention was made to include optical fiber to channel light from a stationary light source to the redirection device.

### ***Response to Arguments***

7. Applicant's arguments with respect to claim 1-13, 15-37, 39, and 40 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2851

Applicant argues the amended language addressing the previous rejection of Miyamoto in view of Connelly and Raskar. However the rejection has been changed to Miyamoto in view of Connelly and Pinhanez as suggested in the BPAI decision mailed on 6/23/2008 where it is stated on page 5 that applicant's own specification describe Pinhanez as distorting the image in the manner now claimed.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW T. SEVER whose telephone number is (571)272-2128. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2851

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew T Sever/ 09/19/2008  
Primary Examiner, Art Unit 2851